

# Center for Solid Oxide Fuel Cell Technology

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**The center explores commercially viable methods of converting gaseous fuels directly into electricity using high efficient fuel cell technologies**

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## **Background**

Established in 1996, the main focus of the center is to develop solid oxide fuel cell (SOFC) technology for the direct conversion of chemical energy of a variety of fuels, such as natural or coal gas and other reformed logistic fuels, into electricity at a very high efficiency. Initially, the center is developing cell stack technology for a 2 to 5 kilowatt unit, which has many potential applications with emphasis on distributed power for residential and remote locations for on-demand electrical power that is clean, efficient, reliable, and noise-free.

## **Technology Development Progress**

The center technologies are based on the design and fabrication of novel, anode-supported solid oxide fuel cells with highly efficient electrodes that have a very low resistance. This concept makes it possible to develop a cost-effective, compact power unit for direct conversion of chemical energy of fuels into electricity for remote and residential applications.

## **Highlights and Accomplishments**

A patent on the development of novel electrodes for SOFC was issued. Fuel cells that operate at lower temperatures but higher efficiency are being developed. Strategic business partners are being sought.

Discussions are in progress with two Utah companies for the development and eventual commercialization of SOFC. The center has been successful in attracting research and development grants from federal agencies as well as the Electric Power Research Institute (EPRI) and the Gas Research Institute (GRI).

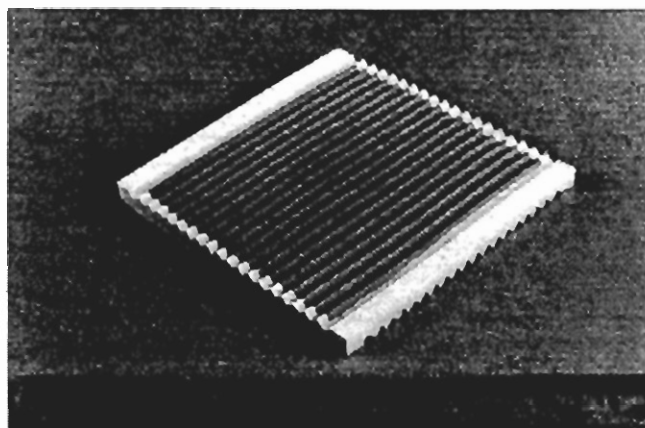


Photo of a 5cm x 5cm solid oxide fuel cell (SOFC) made by the center. The corrugations for the flow of fuel (e.g. natural gas) and oxidant (e.g. air) are in a cross-flow arrangement. The dark top surface is the cathode. SOFCs such as these are currently being configured into a stack. The objective is to construct a 2 to 5 kW stack for residential applications. The SOFC system will convert chemical energy of a variety of fuels into electricity. Several large companies, domestic as well as international, have shown interest. At the present time, a local company, which is developing business relationship with a California-based company, is in the process of negotiating technology rights.

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## **Summary Data:**

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### **Current**

1996-97 Award .....	\$100,000
Matching Funds .....	\$330,397
Patents Pending .....	1
Patents Issued .....	1
License Agreements .....	0
Spin-off Companies .....	0
Companies Assisted .....	2
Industry Jobs .....	0
Center Jobs .....	6

### **Cumulative**

Awards .....	\$100,000
Matching Funds .....	\$330,397
Patents Issued .....	1
License Agreements .....	0
Spin-off Companies .....	0